

## **REMARKS<sup>1</sup>**

In the Office Action mailed December 18, 2006 (“Office Action”), the Examiner objected to the Information Disclosure Statements filed October 19, 2006 and November 6, 2006; rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,619,680 to Nourshargh et al. (“Nourshargh”) in view of U.S. Patent No. 6,117,345 to Liu et al. (“Liu”) and U.S. Patent No. 6,154,582 to Bazylenko et al. (“Bazylenko”); rejected claims 15-17, 24-26 and 29 under 35 U.S.C. § 103(a) as being unpatentable over Nourshargh in view of Liu and Bazylenko, and further in view of U.S. Patent No. 3,850,604 to Klein (“Klein”); rejected claims 18-20 under 35 U.S.C. § 103(a) as being unpatentable over Nourshargh in view of Liu Bazylenko, and Klein, and further in view of U.S. Patent No. 4,915,810 to Kestigian (“Kestigian”); and rejected claim 27 under 35 U.S.C. § 103(a) as being unpatentable over Nourshargh in view of Liu and Bazylenko, and further in view of U.S. Patent No. 6,615,614 to Makikawa (“Makikawa”).

By this amendment, Applicants have amended claims 14, 18, and 29. Claims 14-29 remain pending in this application, of which claims 14-20, 24-27, and 29 are currently presented for examination.

### **I. Objection to the Information Disclosure Statement**

Regarding the objection to the Information Disclosure Statements (IDS) filed October 19, 2006, and November 6, 2006, the Examiner asserts that the lists (Forms PTO/SB/08) fail to comply with 37 C.F.R. § 1.98(a)(2), which requires a legible copy of each cited foreign patent

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<sup>1</sup> The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement of characterization in the Office Action.

document; each non-patent literature publication or that portion which caused to be listed; and all other information or that portion which caused to be listed.

Specifically, the Examiner asserts that cited Korean Patent Publication No. KR 2002-26187 was lined through on the list because no copy was provided, and that the non-patent literature document named Agrawal is lined through because the copy provided lacked page 361. Applicants hereby attach to this Amendment a copy of Agrawal, G.P., "In: Fiber-Optic Communication Systems," including page 361. Applicants are not attaching a copy of Korean Patent Publication No. KR 2002-26187 since the Examiner asserts it has "nothing to do with the present subject matter." Accordingly, Applicants respectfully request that the Examiner assist Applicants in fulfilling their duty of disclosure, and consider these documents and indicate that they were considered by making the appropriate notations on the attached updated Form PTO/SB/08.

Moreover, the Examiner further asserts that the lists fail to comply with the provisions of 37 C.F.R. § 1.97, § 1.98 and MPEP § 609 because the dates of publication for the non-patent literature documents are not provided. Although Applicants note that the exact date is not required as long as an initial prior art determination can be made (*see* MPEP § 609, 8th Ed. (Rev. 5), August, 2006), Applicants attach an updated Form PTO/SB/08 including at least the month and year of the publications, where possible. Accordingly, Applicants respectfully request that the Examiner assist Applicants in fulfilling their duty of disclosure, and consider these documents and indicate that they were considered by making the appropriate notations on the attached corrected Forms PTO/SB/08.

## II. Rejections under 35 U.S.C. § 103(a)

Regarding the rejection of claims 14-20, 24-27 and 29 under 35 U.S.C. § 103(a), Applicants respectfully disagree with the Examiner's arguments and conclusions as set forth in the outstanding Office Action. Accordingly, Applicants respectfully traverse this rejection.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. *See MPEP §2143.03 8th Ed. (Rev. 4), October, 2005.* Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must “ be found in the prior art, and not be based on applicant’s disclosure.” *See MPEP § 2143 8th Ed. (Rev. 5), August, 2006.* A *prima facie* case of obviousness has not been established because, at a minimum, the references fail to teach or suggest every element recited in the claims.

### A. Claim 14

Regarding the rejection of claim 14 under 35 U.S.C. § 103(a), Nourshargh fails to teach or suggest a combination including at least “the core layer completely covers the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in amended claim 14 (emphasis added). Nourshargh teaches:

the desired waveguide pattern is first written on a substrate 11 using photolithography ... core glass 14 is deposited on the substrate ... and by suitably controlling the amount of dopant in the core glass as the dopant in the core glass as the deposition process is carried out, it may have any desired refractive-index profile across its thickness which is less than the depth of the grooves 13 so that the waveguide is fully embedded within the grooves 13. Nourshargh, col. 2, lines 7-28 (emphasis added).

As further shown in Fig. 2(c), since the thickness of the core glass 14 is less than the depth of the grooves 13, core glass 14 does not “completely cover[] the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in claim 14 (emphasis added).

Liu fails to cure the deficiencies of Nourshargh. Liu generally teaches “[a] method for depositing dielectric material into gaps between wiring lines in the formation of a semiconductor device.” Liu, abstract. Liu, however, is silent as to at least a “core layer,” and thus cannot teach or suggest a combination including at least “the core layer completely covers the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in amended claim 14.

Bazylenko fails to cure the deficiencies of Nourshargh and Liu. Bazylenko teaches “[t]he core layer is then chemically etched (FIG. 10b) to produce a chemically etched step profile 19A.” Bazylenko, col. 9, lines 61-62. That is, Bazylenko teaches forming a core layer, and then etching a portion of the core layer. Because Bazylenko teaches removing a portion of the core layer, the core layer of Bazylenko cannot “completely cover[] the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in claim 14 (emphasis added).

For at least the reason that references, whether taken alone or in combination, fail to teach or suggest every element recited in claim 14, a *prima facie* case of obviousness cannot be established with respect to claim 14. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 14 under 35 U.S.C. § 103(a).

B. Claims 15-17, 24-26 and 29

Claims 15-17, and 24-26 depend from claim 14, and thus require all of the elements recited in claim 14. As discussed above, Nourshargh in view of Liu and Bazylenko fails to teach or suggest every element recited in claim 14. Accordingly, these references also fail to teach or suggest every element required by dependent claims 15-17, and 24-26.

Klein, cited for teaching “that a typical sputtering system has a target” (Office Action, page 5), fails to cure the deficiencies of Nourshargh, Liu, and Bazylenko. Klein teaches a general method for sputtering a target using, for example, an RF discharge. Klein, col. 4, lines 3-15. Klein, however, fails to teach or suggest at least the element, “the core layer completely covers the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in amended claim 14, and required by dependent claims 15-17 and 24-26.

For at least the reason that the references, whether taken alone or in combination, fail to teach or suggest every element required by claims 15-17 and 24-26, a *prima facie* case of obviousness cannot be established with respect to claims 15-17 and 24-26. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 15-17 and 24-26 under 35 U.S.C. § 103(a).

C. Claim 29

Claim 29, as amended, contains elements similar to those recited in claim 14. For example, claim 29 recites a combination including at least “the core layer-completely covers the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as also recited in claim 14, and required by claims 15-17 and 24-26. As discussed

above, neither Nourshargh, nor Liu, nor Bazylenko, nor Klein teach or suggest at least this element.

Therefore, for at least the reason that the references fail to teach or suggest every element recited in claim 29, a *prima facie* case of obviousness cannot be established with respect to claim 29. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 29 under 35 U.S.C. § 103(a).

D. Claims 18-20

Claim 18 recites a combination including at least “the core layer-completely covers the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure.” As discussed above, neither Nourshargh, nor Liu, nor Bazylenko, nor Klein teach or suggest at least this element.

Kestigian further fails to cure the deficiencies of Nourshargh, Liu, Bazylenko, and Klein. Kestigian teaches a method for forming targets for use in ion beam sputtering. Kestigian, abstract. Kestigian’s method involves the formation of targets wherein plugs with different compositions can be inserted into a plurality of holes formed in the target. *Id.* at col. 3, lines 12-25. Kestigian, however, does not teach or suggest the formation of waveguides or core layers. Thus, Kestigian fails to teach or suggest at least a combination including, “the core layer completely covers the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in amended claim 18.

For at least the reason the references, whether taken alone or in combination, fail to teach or suggest every element recited in amended claim 18, a *prima facie* case of obviousness has not been established with respect to claim 18. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 18 under 35 U.S.C. § 103(a).

Claims 19 and 20 depend from claim 18, and thus require all of the elements recited in claim 18. Because Nourshargh, Liu, Bezylenco, Kestigian, and Klein fail to teach or suggest every element recited in claim 18, that combination of references also fails to teach or suggest every element required by dependent claims 19 and 20. Accordingly, a *prima facie* case of obviousness cannot be established with respect to claims 19 and 20. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 19 and 20 under 35 U.S.C. § 103(a).

E. Claim 27

Claim 27 depends from claim 14, and thus requires all of the elements of claim 14. As discussed above, neither Nourshargh, nor Liu, nor Bazyleenco, nor Klein teach or suggest at least the elements “the core layer continuously covers the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in amended claim 14 and required by claim 27. Makikawa fails to cure the above-noted deficiencies of these references.

Makikawa is cited by the Examiner at page 6 of the Office Action for allegedly providing a teaching that makes it “obvious to make the undercladding.” Office Action, page 6. Even if the Examiner’s allegation could be considered correct, Makikawa generally discloses a method for preparing an optical waveguide substrate. As shown in FIG 1 (c)-(d), Makikawa teaches depositing a core layer 14 in grooves 12, and over oxidized substrate 13. Makikawa further teaches, however, that:

the surface of the resulting structure is abraded off until the substrate is exposed and a flat surface is defined . . . [a]brasition is preferably continued until the buried portions of the core film are abrade several microns. This results in the substrate in which the core film segments 14 and the under clad film 13 are present on the same substrate surface. Makikawa , col. 3, lines 34-46.

Accordingly, this cannot constitute a teaching of “the core layer completely covers the entire area of the ridge portion, the sidewall portion, and the planar portion of the ridge structure,” as recited in claim 14 and required by claim 27.

For at least the reason that the references, whether taken alone or in combination, fail to teach or suggest each and every element required by claim 27, the Examiner has failed to establish a *prima facie* case of obviousness. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 27 under 35 U.S.C. § 103(a).

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

By:

  
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Gary J. Edwards  
Reg. No. 41,008

Dated: March 19, 2007

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